

WHAT IS CLAIMED IS:

1. An intravascular catheter with an exchangeable shaft section,
comprising:

- a) an elongated proximal shaft section having proximal and distal ends and a first inner lumen extending therein;
- b) an elongated distal shaft section having proximal and distal ends, a second inner lumen extending therein in fluid communication with the first inner lumen in the proximal shaft section; and
- c) means to releasably connect the distal end of the proximal shaft section and the proximal end of the distal shaft section to effect fluid communication between the first and second inner lumens.

2. The intravascular catheter of claim 1 wherein at least the distal shaft section includes a distal port in its distal end and a third inner lumen which extends therein to the distal port and is configured to slidably receive a guidewire therein.

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3. The intravascular catheter of claim 2 wherein an inflatable dilatation balloon is provided on the distal shaft section having an interior in fluid communication with the second inner lumen in the distal section.

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4. The intravascular catheter of claim 1 wherein the connector means includes male threads on an end of one of the shaft sections and female threads on an end of the other shaft section which are configured to threadably engage the male threads.

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5. The intravascular catheter of claim 2 wherein the proximal shaft section includes a fourth inner lumen which is configured to slidably receive a guidewire therein and which is in communication with the third inner lumen in the distal shaft section.

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The intravascular catheter of claim *2* wherein means are provided on the proximal end of the proximal section for directing fluid through the first inner lumen extending therein and the second inner lumen in the distal section into the interior of the balloon.

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A dilatation catheter with an exchangeable shaft section, comprising:

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- 3 a) an elongated proximal shaft section having proximal and
4 distal ends and an first inner lumen extending
5 therein to the distal end;
- 6 b) an elongated distal shaft section having proximal and
7 distal ends, a second inner lumen extending from
8 the proximal end of the distal shaft section to a
9 location spaced proximally from the distal end of
10 the distal shaft section, a distal port in the distal
11 end, a third inner lumen extending therein to and
12 being in fluid communication with the distal port
13 and being coextensive and parallel with at least
14 part of the second inner lumen;
- 15 c) means to releasably connect the distal end of the
16 proximal shaft section to the proximal end of the
17 distal shaft section to effect fluid communication
18 between the first inner lumen of the proximal shaft
19 section and the third inner lumen of the distal shaft
20 section; and
- 21 d) an inflatable dilatation balloon on the distal shaft section
22 having an interior in fluid communication with the second
23 inner lumen.

1 ⁷ ~~8~~. The dilatation catheter of claim ⁶ ~~7~~ wherein the connecting means
2 include male threads on an end of one of the shaft sections and matching
3 female threads on a mating end of the other shaft section.

1 ⁸ ~~8~~. The dilatation catheter of claim ⁷ ~~8~~ wherein the proximal shaft
2 section includes inner and outer tubular members, the distal shaft section
3 includes inner and outer tubular members and the threaded connecting
4 means are on mating ends of the inner tubular members of the proximal and
5 distal shaft sections.

1 ⁹ ~~10~~. The dilatation catheter of claim ⁷ ~~8~~ wherein the proximal shaft
2 section includes inner and outer tubular members, the distal shaft section
3 includes inner and outer tubular members and the threaded connecting
4 means are on mating ends of the outer tubular members of the proximal and
5 distal shaft sections.

Sub G.4
1 11. A balloon catheter with an exchangeable shaft section,
2 comprising:
3 a) an elongated proximal shaft section having proximal and
4 distal ends and an first inner lumen extending
5 therein to the distal end;

6 b) an elongated distal shaft section having proximal and
7 distal ends, a second inner lumen extending from
8 the proximal end of the distal shaft section to a
9 location spaced proximally from the distal end of
10 the distal shaft section, a distal port in the distal
11 end of the distal shaft section, a third inner lumen
12 extending within the distal shaft section to the
13 distal port and a third inner lumen extending
14 therein coextensive and parallel with at least part
15 of the second inner lumen and being in fluid
16 communication with the distal port;

17 c) means to releasably connect the distal end of the
18 proximal shaft section and the proximal end of the
19 distal shaft section to effect fluid communication
20 between the first inner lumen of the proximal shaft
21 section and the third inner lumen of the distal shaft
22 section; and

23 d) an inflatable balloon on the distal shaft section having an
24 interior in fluid communication with the second
25 inner lumen.

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11 ~~12~~ The balloon catheter of claim ~~11~~ including an expandable stent
2 which is mounted about the inflatable balloon in an uninflated condition and
3 which is configured to expand upon the inflation of the balloon.

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1 ~~13~~ A method of treating a patient's body lumen, comprising:
2 a) providing an intraluminal catheter which has an elongated
3 catheter shaft, a proximal shaft section, a
4 replaceable distal shaft section and means to
5 releasably connect the replaceable distal section
6 with the proximal shaft section;
7 b) advancing the intraluminal catheter through a patient's
8 body lumen until the catheter is disposed within a
9 desired region thereof;
10 c) performing an intraluminal procedure within the body
11 lumen with the intraluminal catheter;
12 d) withdrawing the intraluminal catheter from the patient;
13 e) removing the replaceable distal shaft section of the
14 intraluminal catheter;
15 f) connecting a replacement distal shaft section to the
16 proximal shaft section; and

17 g) advancing the intraluminal catheter with the replacement
18 distal shaft section into the patient's body lumen
19 until the intraluminal catheter is disposed within a
20 desired region of the patient's body lumen.

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1 A method of treating a patient's body lumen, comprising:
2 a) providing a dilatation catheter which has an elongated
3 catheter shaft, a replaceable distal shaft section, a
4 dilatation balloon on the replaceable distal shaft
5 section, a proximal shaft portion and means to
6 connect the proximal and distal shaft sections;
7 b) advancing the dilatation catheter through the patient's
8 vasculature until the dilatation balloon is disposed
9 within a stenotic region of a patient's artery;
10 c) withdrawing the dilatation catheter from the patient;
11 d) removing the replaceable distal shaft section of the
12 catheter; and
13 e) connecting a replacement distal shaft section to the
14 proximal shaft section; and
15 f) advancing the catheter with the replacement distal shaft
16 section into the patient's vasculature until the

17 catheter is disposed within a desired region of the
18 patient's vasculature.

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1 15. The method of claim 14 wherein the replacement distal shaft
2 section has an inflatable balloon with an expandable stent mounted about
3 the inflatable balloon and when the inflatable balloon and stent mounted
4 thereon are disposed within the desired region of the patient's vasculature,
5 inflating the balloon to expand the stent within the desired region of the
6 vasculature and then deflating the balloon so that the catheter can be
7 removed, leaving the expanded stent within the patient's vasculature.

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2 16. A dilatation catheter comprising:
3 a) an elongated catheter shaft having a guidewire receiving
4 inner lumen and an inflation lumen extending
5 therein and proximal and distal ends;
6 b) a dilatation balloon having an interior in fluid
7 communication with the inflation lumen extending
8 within the catheter shaft;
9 d) a proximal shaft section having proximal and distal ends
10 and extending to a location proximal to the
dilatation balloon; and

11 e) a replaceable distal shaft section having a proximal end
12 releaseably connected to the distal end of the
13 proximal shaft section.

1 17. An intravascular catheter comprising:

- 2 a) a proximal shaft section having a proximal end, a distal
3 end and an inner lumen extending therein;
4 b) a distal shaft section having a proximal end, a distal end
5 and an inner lumen extending therein; and
6 c) means to releasably connect the proximal end to the
7 distal shaft section to the distal end of the proximal
8 shaft section.

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~~18.~~ The intravascular catheter of claim ¹⁶~~17~~ wherein the distal shaft
2 section is releasably connected to the proximal shaft section by means of
3 interconnecting threads on the distal end of the proximal shaft section and
4 on the proximal end of the distal shaft section.

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~~19.~~ The intravascular catheter of claim ¹⁷~~18~~ wherein the threads on
2 the distal end of the proximal shaft section are male threads and the mating
3 threads on the proximal end of the distal section are female threads.

19 20. The intravascular catheter of claim 18 wherein the proximal
2 section is a metallic tube.

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21. The intravascular catheter of claim 20 wherein the metallic
2 proximal shaft section has male threads on the distal end thereof.

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22. The intravascular catheter of claim 18 wherein the means to
2 releasably connect the proximal end of the distal shaft section to the distal
3 end of the proximal shaft section includes an intermediate tubular element
4 which has proximal and distal ends, threads on at least one of said ends
5 which match the threads on the mating end of one of the shaft sections with
6 the other of said ends of the intermediate tubular element being secured to
7 the mating end of the other shaft section.

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23. The intravascular catheter of claim 22 wherein threads are on
2 the proximal end of the intermediate tubular element and the distal end of
3 the proximal shaft section.

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24. The intravascular catheter of claim 22 wherein threads are on
2 the distal end of the intermediate tubular element and the proximal end of
3 the distal shaft section.

